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ABSTRACT

This study examined the effects of age and sex on the degree to which altruistic behavior could be manipulated in a laboratory setting. The 192 children who participated were divided equally by sex into three age groups: 5-6 years, 7-9 years, and 10-12 years. Sex was varied both as a recipient and a benefactor characteristic. The experimental manipulation consisted of having each child pretend that he was helping to make a movie. The instructions for the experimental group stressed cooperation and kindness in helping an imaginary boy or girl pick up some pencils while children in the control group were simply told to pick up and sort the pencils according to length. In the test session which followed, each child's behavior (altruistic versus rivalrous) was measured by recording how he allocated rewards to himself and another child on a set of specially designed choice cards. The findings indicated that females were generally more altruistic than males. However, females pretrained to be altruistic to male partners showed lower altruism than expected, suggesting that sex role factors might be interfering. Males were less responsive to pretraining and/or partner sex effects, showing consistently rivalrous behavior across all conditions. Altruism was found to increase markedly for both males and females in the oldest age group. (JMB)

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ALTRUISM AND RIVALRY: AN ANALYSIS OF AGE AND SEX DIFFERENCES

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Many of the factors affecting the development of altruistic behavior in children have been topics of consideration in past research, but certain critical features, such as age changes, sex differences, recipient characteristics, and training manipulations and their interactive effects remain to be studied. The research presented here attempts to evaluate the effect these factors have upon altruistic behavior and its development in children.

It seems likely that altruism is affected by socialization practices. In our society, males are encouraged to be competitive, assertive, objective, and unemotional, whereas the female child is encouraged to be non-competitive, dependent, subjective, and emotional. A primary distinction between these sex types is that the male is achievement oriented and the female is other oriented (Bardwick and Douvan, 1972), suggesting that in a competition-cooperation task the male child will strive for achievement and success, even in a task where such behavior is self-defeating, and girls will opt for an equality of outcomes. Studies with adults by Uesugi and Vinacke (1963 and Vinacke, 1959) have yielded results consistent with this suggestion.

The accommodative tendency, or strategy of females may, however, be situation specific, or more precisely, partner specific. In a recent study (Skarin and Moely, 1974), it was found that 8 year old males will always compete, regardless of the sex of the partner, in a situation where such behavior is maladaptive. Females will respond competitively when playing with males, but when playing with other females they make fewer competitive and more neutral responses.

Girls are more responsive to instruction than boys, as well. These findings can be taken as evidence suggesting that girls' behavior is more responsive to environmental conditions than boys'.

The task developed by Kagan and Madsen (1972) was used in the present study. In this task, the child chooses how he will allocate rewards; he could be altruistic or rivalrous. Choice cards were devised to systematically vary relative and absolute gains and to measure their effect on rivalry.

In the present study, sex was varied both as a recipient characteristic and as a benefactor characteristic. Age was varied by using three age groups; one at each extreme and one at the mid-point of the age range presumed to encompass changes. In view of the dominant tendency for children to behave in a rivalrous or competitive fashion (Kagan and Madsen, 1971 & 1972; Skarin and Moely, 1974), an additional variable was introduced in this experiment in an attempt to manipulate altruistic behavior. Yarrow, Scott and Waxler (1973) have demonstrated the effectiveness of modeling and positive affect as a means of increasing altruistic behavior. Therefore, the pretraining manipulation involved either a cooperation task (experimental) or a pencil sorting task (control), in which the subject performed the designated task in front of a camera as part of a movie. The effects of this pretraining were expected to increase altruistic behavior for the experimental group.

In the choice cards used by Kagan and Madsen (1972) and by Avellar and Kagan (1974), three factors can affect the

child's choice of a rivalrous or altruistic outcome. These are: the absolute number of tokens he can obtain by choosing; the choice which maximizes his gain relative to that obtained by his partner; and the choice which minimizes his partner's gain relative to his own outcome. These three factors were used to select the card types for the present study.

METHOD

Subjects were 192 elementary school children, ranging in age from 5 to 12 years. The three age groups; 5-6 years, 7-9 years, and 10-12 years each contained 64 subjects, equally divided by sex. Subjects in each age group were randomly assigned to one of four sex-pair combinations (male with male, male with female, female with male, female with female) under each of two pretraining conditions (experimental and control).

For the main task, choice cards were devised to vary the subject's relative gain, relative loss, and relative gain plus absolute gain. There were five different cards, each of which was 8 inches by 20 inches, and divided in the middle to indicate the two alternatives. These are shown in Table 1 of the handout. Two of the cards tested relative gain, two tested relative loss, and one card tested relative gain plus absolute gain.

Poker chips were used as tokens or markers. The chooser's outcomes are presented on the lower half of the cards shown in Table 1, with the rivalrous choices on the right side of the card. Right-left spatial arrangement of the cards varied randomly, as did order of card types within each trial block.

Pretraining experiences were given to both the experimental

and control groups. Both groups of subjects used the same materials and performed in front of the camera. Upon entering the room each subject was met by a male experimenter, who told the child that he or she could help the experimenter "make a movie"; to do this, the child would have to "pretend". Subsequent instructions for the experimental group stressed cooperation and kindness in helping another (imaginary) boy or girl pick up some pencils he/she had dropped; for the control group, there was no other child and they merely picked up and sorted the pencils according to length.

The child then performed for the camera two times (for a total of about 5 minutes). After the second attempt, the experimenter praised the subject for his/her performance and said that they were ready to play the "game" in the other room. Then, the experimenter (E_1) led the subject to the other room where a second experimenter (E_2) and another child of the appropriate age and sex were waiting.

For the main task the two children were seated facing each other, with a choice card on a table between them. The experimenter explained that the chooser should select either the right or left side of the card and then place the markers from his half of the selected alternative in his container and the markers from his partner's half in his partner's container. The subject, who had just entered the room, always was the one who chose; the passive partner was instructed to sit quietly and not talk during the game. The subject was instructed to choose whichever alternative he/she preferred, and was told that after all choices had been made, the person with the most markers would be able to choose his

prize first, but everybody would receive a prize.

Each subject was presented with 30 choices, each of 5 card types, once in each of 6 trial blocks. After playing the game, each child served as the passive partner for the next subject.

RESULTS

Scores obtained indicated the number of altruistic responses for each subject. The data were initially subjected to an analysis of variance with Age, Pretraining, Sex of Subject, and Sex of Partner as between-subject variables and Blocks of Trials as a repeated measure. A nonsignificant Trial Blocks effect showed that performance did not change over trials. Consequently, subsequent analyses collapsed data across trial blocks and included Card Type as a repeated measure. An analysis which examined each of the five card types separately indicated that the scores for cards 1 and 2 were very similar, as were the scores for cards 3 and 4. Therefore, to simplify the presentation of the results, the scores on cards 1 and 2 were combined and averaged, and the same was done for cards 3 and 4. Data were then reanalyzed, to compare the three card types used (relative gain, relative loss, and relative gain plus absolute gain).

The analysis of major interest was an analysis of variance including Age (3 levels), Pretraining (2 levels), Sex of Subject (2 levels) and Sex of Partner (2 levels) as between-subject variables and Card Type (3 levels) as a within-subject variable. This analysis yielded an interaction of Pretraining by Sex of Subject by Sex of Partner, $F(1,168)=7.57$, $p<.05$,

which is shown in Figure 1 of the handout. Subsequent analyses indicated that the interaction was dependent upon the behavior of the female subjects. Girls with female partners and boys in both partner sex conditions showed a slight, insignificant increase in altruism as a result of pretraining. The interaction appears to be caused by the low altruism scores of females in the experimental group who played the game with male partners. Girls with male partners were the only subgroup to show a decrease in altruism after training designed to increase it. This effect held for all three card types.

As predicted, females made a greater number of altruistic responses than males at all age levels. The overall Sex of Subject effect, $F(1,168)=2.58$, $p<.01$, is due to the lower number of altruistic responses shown by males than by females. This can be taken as a reflection of social role behavior, demonstrating the females' concern for others and the male subjects' preoccupation with competition. Males showed little difference in their behavior with same-sex or opposite-sex partners, while females tended to demonstrate greater altruism to opposite-sex partners than to same-sex partners in the control condition.

The concern female control subjects showed for male partners was completely negated by altruistic pretraining. Rather than increasing altruistic responses as predicted, pretraining produced lower altruism scores in females with male partners. Most probably the reason female subjects did not respond to the pretraining with male partners was due to the nature of the experimental pretraining task itself. As will be recalled, the experimental pretraining task involved

physical assistance to either a boy or a girl, depending upon the sex of the partner in the game to follow. Social roles dictate that females should help others in almost all situations except those involving physical assistance. Evidently females that were required to physically assist a male were cognitively aware of the incongruence with social roles and as a result found the task to be aversive. The pretraining may have also increased the salience of the partner's sex.

Although female subjects did not respond as expected to the experimental pretraining, they were obviously more aware than males of the cognitive aspects of the experimental pretraining task and of social stimuli in the altruism task itself. Male subjects, unlike females, did not respond differently to males or females as passive partners.

A significant main effect of Card Type, $F(2,336)=44.00$, $p<.001$, reflects the pattern of highest altruistic responses on relative gain cards, lowest altruistic responses on relative loss cards, and intermediate altruism scores on relative gain plus absolute gain cards

Analyses yielded several significant interactions involving Card Type, which reflect differences in the patterns shown by certain subgroups.

An analysis of variance of data for males showed a significant interaction of Age by Pretraining by Card Type, $F(4,168)=3.13$, $p<.05$. Examination of the means, in Table 2 of the handout, indicates that pretraining effects varied for different card types and age groups, in a manner that is difficult to explain. Most groups of males did show a pattern of highest altruism on the relative gain cards and least

altruism on relative loss cards. Only the youngest control group boys failed to show this distinction.

An analysis of data for female subjects yielded an interaction of Age by Sex of Partner by Card Type, $F(8,336)=2.58$, $p<.01$. As shown in Table 3 of the handout, the oldest females with both sex partners and the youngest females with male partners showed the pattern of high altruism on the relative gain cards, low altruism on the relative loss cards, and intermediate scores on the relative gain plus absolute gain card. The groups of females that deviated from that pattern are the youngest females with female partners and both groups of 7-9 year old females, all of which are low on card 5 and high on relative loss cards compared to the pattern shown by the other groups. However, the discrepancy between relative gain and relative loss cards was maintained in these groups.

Age as a main effect was significant, $F(2,168)=8.93$, $p<.01$, with children of age 5-6 showing low altruism ($\bar{X}=1.688$), children at ages 7-9 decreasing slightly ($\bar{X}=1.354$), and 10-12 year olds showing much higher altruism scores ($\bar{X}=2.312$).

In an earlier study, Kagan and Madsen (1972) found an increase in rivalry from ages 5-6 years to 8-10 years. The present study generally replicated this effect in the two younger groups. However, addition of a group of 10-12 year olds allowed examination of age differences across a wider range, and showed that the increase in rivalry (decrease in altruism) with age reverses by age 10-12 years. These subjects were students at a parochial school and were given lessons in values, so that their greater altruism may result from

extensive school training in moral principles.

In summary, females were in general more altruistic than males, but this difference occurs only under certain pretraining and partner sex conditions. The low altruism of females pretrained to be altruistic to male partners indicates that sex role factors can operate to negate or reverse the intended effects of a manipulation of social behaviors. Males were generally less responsive to pretraining and/or partner sex effects, showing consistently rivalrous behavior across all conditions. Altruism was found to increase markedly for both males and females of the oldest age group, a group not included in earlier altruism research.

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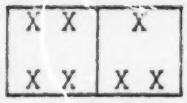
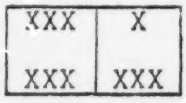
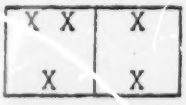
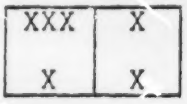
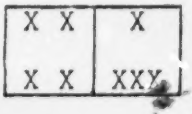
TABLE 1

			Proportion Rivalrous Responses
Card 1		Relative Gain +1	(Avellar & Kagan) .47, .78
Card 2		Relative Gain +2	(Kagan & Madsen) .45, .69
Card 3		Relative Loss -1	(Avellar & Kagan) .52, .92
Card 4		Relative Loss -2	(new)
Card 5		Rel. Gain +2 plus Abs. Gain +1	(Kagan & Madsen) .72, .78 (Avellar & Kagan) .86, .91

Characteristics of response cards and proportions of rivalrous responses made to each by 5-6 and 8-10 year old white children studied by Kagan and Madsen (1972) and by Avellar and Kagan (1974).

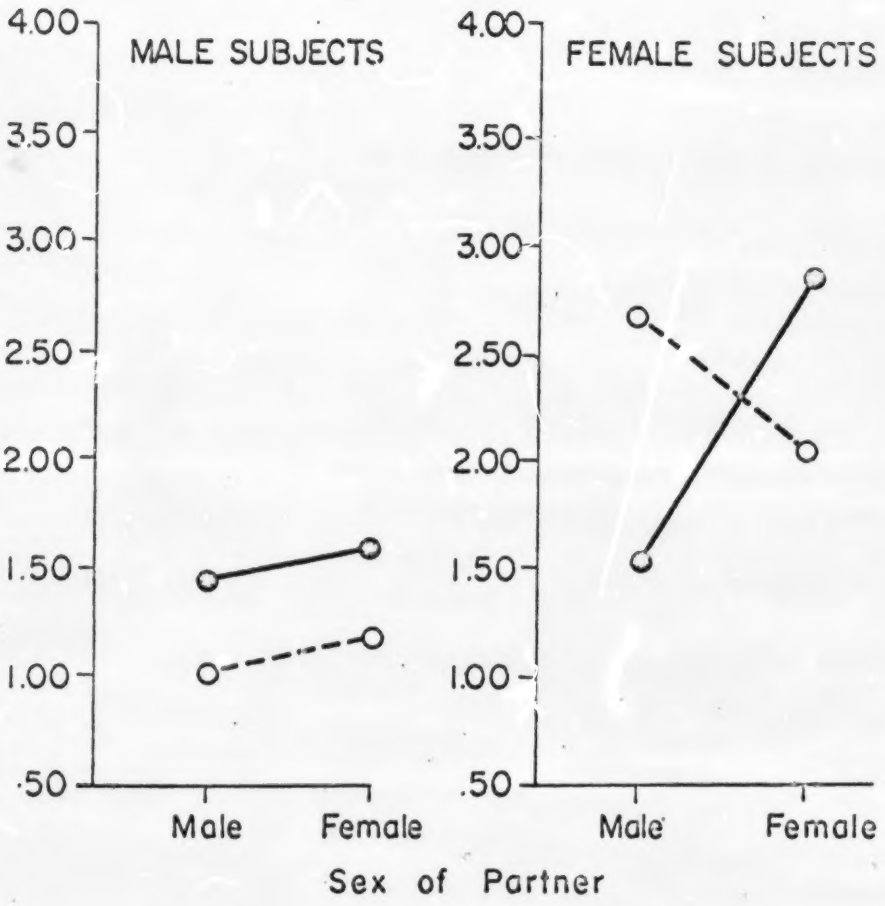


Fig. 1 - Number of altruistic responses given by experimental and control group males and females, with male or female partners.

TABLE 2 (Male Subjects Only)

Card Type

	Relative Gain		Relative Loss		Rel. Gain + Abs. Gain	
Age Group	Exp.	Con.	Exp.	Con.	Exp.	Con.
Youngest	1.688	0.875	0.844	0.969	0.875	0.938
Middle	2.125	1.156	0.656	0.594	1.438	0.500
Oldest	2.093	2.000	1.656	1.000	1.875	2.250

TABLE 3 (Female Subjects Only)

Card Type X Sex of Partner

	Relative Gain		Relative Loss		Rel. Gain + Abs. Gain	
Age Group	Male	Female	Male	Female	Male	Female
Youngest	3.531	3.406	0.688	1.812	3.000	1.625
Middle	1.906	2.688	1.438	2.125	0.500	1.125
Oldest	3.031	3.719	1.844	1.594	3.062	3.625